What is claimed is:

1. A wireless communication apparatus, comprising:

a mounting substrate including:

a duplexer connected to an antenna terminal;

a receiving amplifier and a transmitting amplifier individually connected to the duplexer;

a processor unit having a receiving processor and a transmitting processor respectively connected to the receiving and transmitting amplifiers in a region spaced from the receiving and transmitting amplifiers; and

a baseband processor connected to the processor unit;

a shield case configured to cover the receiving amplifier, the transmitting amplifier, and the processor unit;

a first partition provided from a top panel of the shield case to a surface of the mounting substrate so as to separate the receiving and transmitting amplifiers by extending from an end of the shield case; and

a second partition extending to another end of the shield case from a cut, the cut extending from the first partition in the shield case so as to be laid across the processor unit.

2. The apparatus of claim 1, wherein the processor unit monolithically integrates the receiving and transmitting processors and a ground region placed between the receiving and

transmitting processors on a semiconductor chip.

3. The apparatus of claim 2, wherein the first partition is connected to a first ground terminal of the processor unit, the first ground terminal being connected to an end of the ground region and being provided in a vicinity of the first partition.

4. The apparatus of claim 3, wherein the second partition is connected to a second ground terminal of the processor unit, the second ground terminal being connected to other end of the ground region and being provided in a vicinity of the second partition.

5. The apparatus of claim 4, wherein at least a part of the respective first and second ground terminals are placed to face each other.

6. The apparatus of claim 2, wherein the shield case is connected to third ground terminals of the processor unit, the third ground terminals being connected to a receiving side ground region and a transmitting side ground region, respectively, of the receiving and transmitting processors provided on opposite ends of the semiconductor chip.

7. The apparatus of claim 4, wherein a conductive member is placed between the cut and a package of the processor unit in

contact with the cut and the package.

8. The apparatus of claim 7, wherein an external ground electrode connected to at least one of the first and second ground terminals is provided on a surface of the package, the surface being in contact with the conductive member.

9. A semiconductor device, comprising:

a semiconductor chip configured to monolithically integrate a receiving processor which converts a radio frequency receiving signal into a baseband receiving signal, a transmitting processor which converts a baseband transmitting signal into a radio frequency transmitting signal, and a ground region located to separate the receiving and transmitting processors;

a first ground terminal connected to the ground region and located between a receiving input terminal for the radio frequency receiving signal and a transmitting output terminal for the radio frequency transmitting signal, the receiving input terminal and the transmitting output terminal being provided in a first end of the semiconductor chip;

a second ground terminal connected to the ground region and located between a receiving output terminal for the baseband receiving signal and a transmitting input terminal for the baseband transmitting signal, the receiving output terminal and the transmitting input terminal being provided in a second end

of the semiconductor chip facing the first end; and

a package configured to seal the semiconductor chip.

10. The semiconductor device of claim 9, wherein the receiving processor has a quadrature demodulation section connected to the receiving input terminal to convert the radio frequency receiving signal into the baseband receiving signal, and a receiving baseband amplifier section connected to the quadrature demodulation section to amplify the baseband receiving signal to output the baseband receiving signal to the receiving output terminal, and the transmitting processor has a transmitting baseband amplifier section connected to the transmitting input terminal to amplify the baseband transmitting signal, a quadrature modulation section connected to the transmitting baseband amplifier section to convert the amplified baseband transmitting signal into the radio frequency transmitting signal, and a radio-frequency amplifier connected to the quadrature modulation section to amplify the radio frequency transmitting signal to output the radio frequency transmitting signal to the transmitting output terminal.

11. The semiconductor device of claim 9, wherein at least a part of the respective first and second ground terminals are placed to face each other.

12. The semiconductor device of claim 9, wherein the ground

region extends from a vicinity of the first end to a vicinity of the second end between the receiving and transmitting processors.

13. The semiconductor device of claim 9, wherein the ground region has a receiving ground region located on a receiving processor side and a transmitting ground region located on a transmitting processor side between the receiving and transmitting processors.

14. The semiconductor device of claim 9, wherein the ground region extends from a vicinity of the first end to a vicinity of the quadrature modulation section between the receiving and transmitting processors.

15. The semiconductor device of claim 9, wherein the ground region has a first ground region which extends from a vicinity of the first end to a vicinity of the quadrature modulation section and a second ground region which extends from a vicinity of the second end to a vicinity of the transmitting baseband amplifier section between the receiving and transmitting processors.

16. The semiconductor device of claim 9, wherein a receiving side ground region and a transmitting side ground region respectively extend from a vicinity of the first end to a

vicinity of the quadrature demodulation section and a vicinity of the quadrature modulation section, in vicinities of opposite ends of the semiconductor chip, the opposite ends facing along a direction orthogonal to a direction from the first end to the second end.

17. The semiconductor device of claim 9, wherein a plurality of the transmitting and receiving processors are provided.

18. The semiconductor device of claim 9, wherein an external ground electrode connected to the first and second ground terminals is provided on a surface of the package.

19. The semiconductor device of claim 9, wherein the package is of a ball grid array type in which terminals are provided on a rear surface of a package substrate having the semiconductor chip mounted on a front surface of the package substrate.